



Mathematics 6

Module 8

**Home Instructor's Guide
and Assignment Booklet**

8A



**Learning
Technologies
Branch**

Alberta
LEARNING

Mathematics 6
Module 8: Data Analysis
Home Instructor's Guide and Assignment Booklet 8A
Learning Technologies Branch
ISBN 0-7741-2394-x

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



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- Alberta Learning, <http://www.learning.gov.ab.ca>
- Learning Technologies Branch, <http://www.learning.gov.ab.ca/ltb>
- Learning Resources Centre, <http://www.lrc.learning.gov.ab.ca>

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Module 8: Data Analysis

Overview

In Module 8 the student reviews methods for formulating questions that can be investigated. The student explores choosing appropriate data sources, selecting representative samples, and collecting data to answer questions. Also, depending on the context, the student selects the most appropriate data displays from a variety of choices. The student investigates double-bar graphs, stem-and-leaf plots, and histograms. From these choices, the student analyses the data displayed to answer the questions the surveys were designed to address.

Assessment

At the end of each of the three lessons, the student will be directed to complete an assignment in one of the two Assignment Booklets. The assignments will be graded by the teacher and have a total value of 90 marks.

Students are also expected to complete the Numbers in the News project. This project has a value of 10 marks. Encourage the student to look through a newspaper at least once a week for items on the Scavenger Hunt list. Read through the list with your student and suggest that he or she begin collecting samples of the ideas that he or she already understands. Other samples can be collected as ideas are introduced or extended in the module. Encourage your student to collect as many samples as he or she wishes. At the end of the module, the student will need to choose at least one sample for each question and submit the samples with the Assignment Booklet.

Pacing

The module has been designed so that the student can work at his or her own pace. Each lesson, including the lesson assignment, will take the average student about one week to complete. The Challenge Activity in each lesson is optional.

Allowing extra time for review of basic facts and project work, Module 8 will take the student 3 to 4 weeks to complete.

Lesson 1: Surveys and Samples

Overview

In Lesson 1 the student explores methods for formulating questions that can be investigated through surveys. The student investigates ways of choosing appropriate data sources, selecting representative samples, and collecting data to answer questions.

Special Requirements

There are no special requirements for this lesson.

Sharing Time

The student is asked to discuss what he or she is learning with his or her home instructor once in Lesson 1—at the end of Activity 3.

Activity 3 Sharing Time

Practice and Homework Book, page 64, questions 1 to 6

Answers will vary. Sample answers are given.

1. Are you right-handed or left-handed?
2. There will be thirty students in the sample.
3. Survey students as they arrive at school in the morning.

4.

Right-handed Students	Left-handed Students

5. The ratio of right-handed to left-handed students is 27 to 3 or 9 to 1.
6. The results will be representative of the school because the sample was selected at random.

Lesson 2: Displaying Data**Overview**

In this lesson the student examines ways of choosing and making appropriate data displays. The student is introduced to double-bar graphs, stem-and-leaf plots, and histograms.

Special Requirements

There are no special requirements for this lesson.

Sharing Time

The student is asked to discuss what he or she is learning with his or her home instructor twice in Lesson 2—at the end of Activity 1 and at the end of Activity 2.

Activity 1 Sharing Time

Practice and Homework Book, page 70, questions 1 to 4

Answers will vary. Sample answers are given.

1. Thirty Grade 5 students and 21 Grade 6 students were surveyed.
2. The most popular choice was the planetarium—chosen by 14 students.
3. The least popular choice was the early settler village—chosen by 6 students.
4. The zoo was the most popular choice among Grade 5 students and the museum was the least popular.

The planetarium was the most popular choice among Grade 6 students and the early settler village was the least popular.

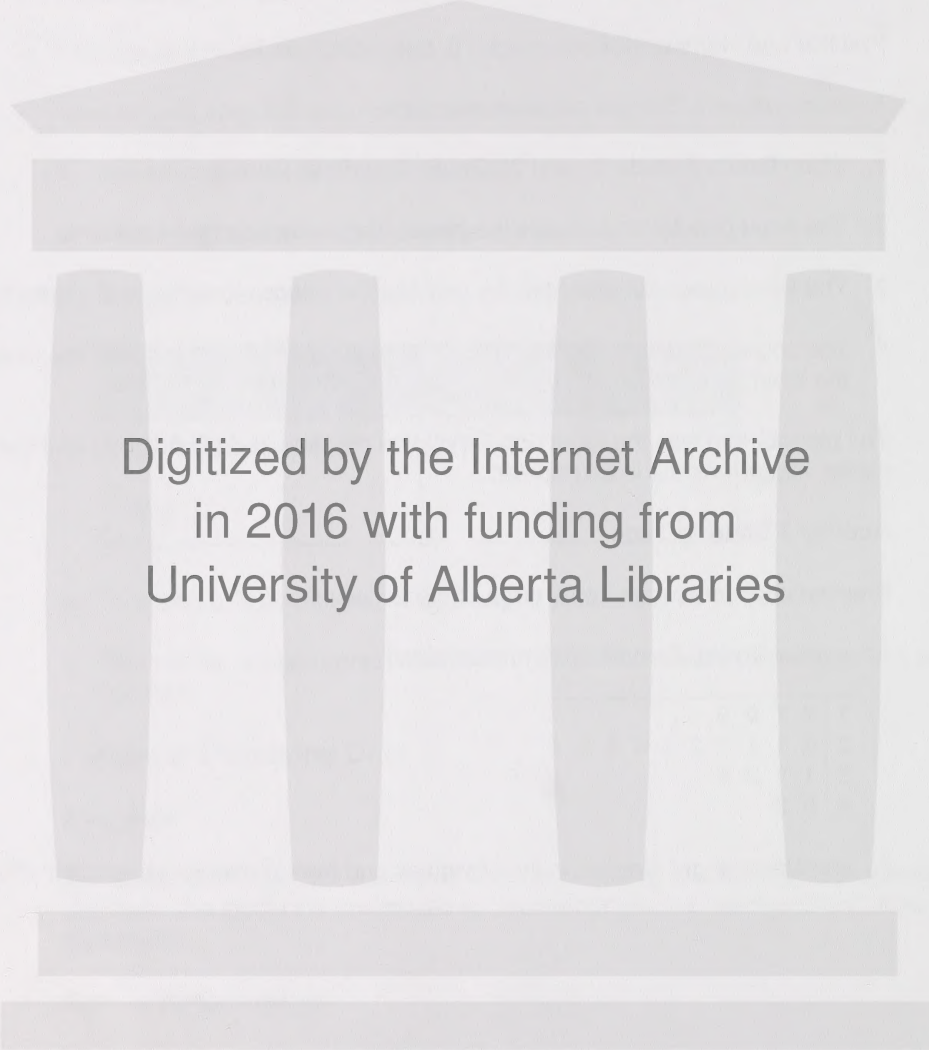
Activity 2 Sharing Time

Practice and Homework Book, page 73, questions 1 and 2

Answers will vary. Sample answers are given.

1.	1	6	7	9	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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2. Most people get married in their twenties and fewest people get married after forty.



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ASSIGNMENT BOOKLET 8A

PAT0610 Mathematics 6

Module 8: Lesson 1 Assignment and Lesson 2 Assignment

Home Instructor's Comments and Questions

Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

Date Assignment Received:

Grading:

Additional Information:

FOR HOME INSTRUCTOR USE (if label is missing or incorrect)

Student File Number:

Date Submitted:

Apply Module Label Here

Name

Address

Postal Code

*Please verify that preprinted label is for
correct course and module.*

Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

INSTRUCTIONS FOR SENDING IN THIS DISTANCE LEARNING ASSIGNMENT BOOKLET

When you register for distance learning courses, you are expected to send in Assignment Booklets for corrections regularly. Try to send each Assignment Booklet as soon as you have completed it. Before sending your Assignment Booklet, please check the following:

- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

MAILING

1. Postage Regulations

Do **not** enclose letters with Assignment Booklets.

Send all letters in a separate envelope.

2. Postage Rates

Take your Assignment Booklet to the post office and have it weighed. Attach enough postage and seal the envelope. Assignment Booklets will travel faster if correct postage is used and if they are in large envelopes that are no more than two centimetres thick.

FAXING

1. Assignment Booklets may be faxed. Contact your teacher for the fax number.
2. All faxing costs are the responsibility of the sender.

E-MAILING

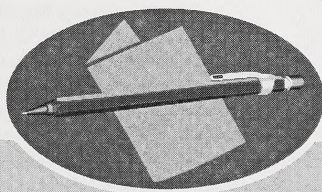
Assignment Booklets may be e-mailed. Contact your teacher for the e-mail address.

Mathematics 6

Module 8

Data Analysis

ASSIGNMENT BOOKLET 8A



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FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 1 Assignment	30	
Lesson 2 Assignment	30	
	60	

Teacher's Comments

Mathematics 6
Module 8: Data Analysis
Assignment Booklet 8A
Learning Technologies Branch

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ASSIGNMENT BOOKLET 8A

MATHEMATICS 6—MODULE 8: DATA ANALYSIS

LESSON 1 ASSIGNMENT AND LESSON 2 ASSIGNMENT

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

There are two lesson assignments in this Assignment Booklet. The total value of these assignments is 60 marks. The value of each question is stated in the left margin.

Be sure to proofread each assignment carefully.

30

Lesson 1 Assignment: Surveys and Samples

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

Carmen designed and handed out questionnaires to 500 middle-year students at schools in her community.

What do you want to be when you grow up? Choose one of the following:

- ☐ Doctor/Dentist ☐ Teacher ☐ Lawyer
- ☐ Sports Manager, Coach, or Trainer

Fifty questionnaires were returned. The following table shows the results of Carmen’s survey.

	Tally for Boys	Frequency for Boys	Tally for Girls	Frequency for Girls	Total Frequency
Doctor/Dentist			/		
Teacher			/		
Lawyer					
Sports Manager, Coach, or Trainer			/		
	Total Boys =		Total Girls =		Students =

Use this information to answer questions 1 and 2.

- ③
1. Complete the table that shows Carmen’s results.

2. Carmen reached the conclusion that most students will become doctors or dentists. For each of the following, comment on how appropriate it is and describe what else you think Carmen might have done.

- ③
- a. the wording of Carmen’s questionnaire

- ③
- b. the method of gathering data

③ c. the sample she chose to survey

② d. the conclusion she reached

Today is the eleventh birthday of Jordan and his twin sister, Alysha. They wondered how many other children in Canada are having their eleventh birthday today. They found the following statistics on the Statistics Canada website:

POPULATION BY SEX AND AGE IN 2002

	Number		
Ages	Both Sexes	Male	Female
All Ages	31 413 990	15 552 644	15 861 346
0–4	1 705 313	872 838	832 475
5–9	1 994 619	1 023 040	971 579
10–14	2 108 813	1 081 375	1 027 438
15–19	2 095 589	1 076 030	1 019 559
20–24	2 144 749	1 094 105	1 050 644
25–29	2 138 932	1 083 359	1 055 573

STATISTICS CANADA

Use these statistics to answer questions 3 to 6.

① 3. a. How many years are represented by each age interval (class size or width)?

① b. How many children are in Jordan’s and Alysha’s age interval?

③ c. Do you think it is reasonable to assume that there are about the same number of children for each age in Jordan’s and Alysha’s age interval? Explain.

③ d. Use your answers to question 3 to find how many children in Canada you would expect to be 11 years of age.

4. Bud thinks that the taller a basketball player is, the more points he or she scores. Explain why each of the following would or would not be an appropriate sample to use to verify Bud's prediction.

②

- a. NBA scoring leaders in the last 10 years

②

- b. all basketball players on a local high school team

②

- c. the centres on last year's provincial teams

②

- d. the information he can find in a 1990 copy of *World Book Encyclopedia*

30

Lesson 2 Assignment: Displaying Data

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

1. Some average annual household expenditures for Canada and for Alberta are shown in the following table. Use this data to answer the following questions.

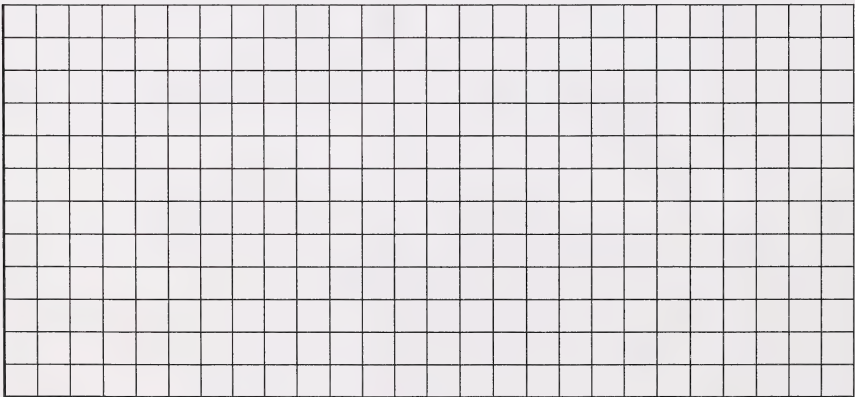
AVERAGE ANNUAL HOUSEHOLD EXPENDITURES
(IN DOLLARS) IN 2001

Expenditure	Canada	Alberta
Food	6 438	6 728
Shelter	10 984	11 880
Clothing	2 398	2 714
Transportation	7 596	8 828
Recreation	3 453	4 461

STATISTICS CANADA

5

- a. Make and label a double-bar graph so that you can compare the given expenditures for Canada and Alberta.



- ② b. What pattern do you notice when you compare the average amounts spent in Alberta with the average amounts spent in Canada?

- ① c. For which expenditure is there the greatest difference?

- ① d. For which expenditure is there the least difference?

2. Celine is the president of a club that meets to watch movies and play board games. Each member was asked to suggest a favourite movie and give its length. Celine wrote the lengths of all the movies in minutes, as follows. Use this data to answer the following questions.

127	121	97	175	145	93	106	152	116	129	92
115	124	116	110	125	133	148	133	105	141	96
100	107	115	129	126	160	122	105	110	135	98

- ③ a. Make and label a stem-and-leaf plot to organize the data.

①

b. What is the range of the data? Show your work.

②

c. Find the middle value or values. Explain your strategy.

②

d. Explain how Celine can use the information from the survey.

3. A car dealership advertised its inventory of used cars in the newspaper. The prices are listed. Use this data to answer the following questions.

\$6900	\$16 900	\$19 900	\$7900	\$8900	\$8900
\$11 900	\$9400	\$9900	\$13 900	\$11 900	\$13 900
\$14 900	\$14 900	\$6900	\$15 900	\$16 900	\$18 900
\$29 900	\$7900	\$29 900	\$10 900	\$12 900	\$29 900
\$6900	\$18 900	\$24 900	\$19 900	\$17 900	\$20 900
\$8900	\$21 900	\$23 900	\$6900	\$6900	\$11 900
\$7900	\$18 900	\$29 900	\$11 900		

①

a. Find the least and greatest prices.

- ① b. What is the range in prices? Show your work.

- ④ c. Complete the interval table and organize the data so you can use it to make a histogram in the next question.

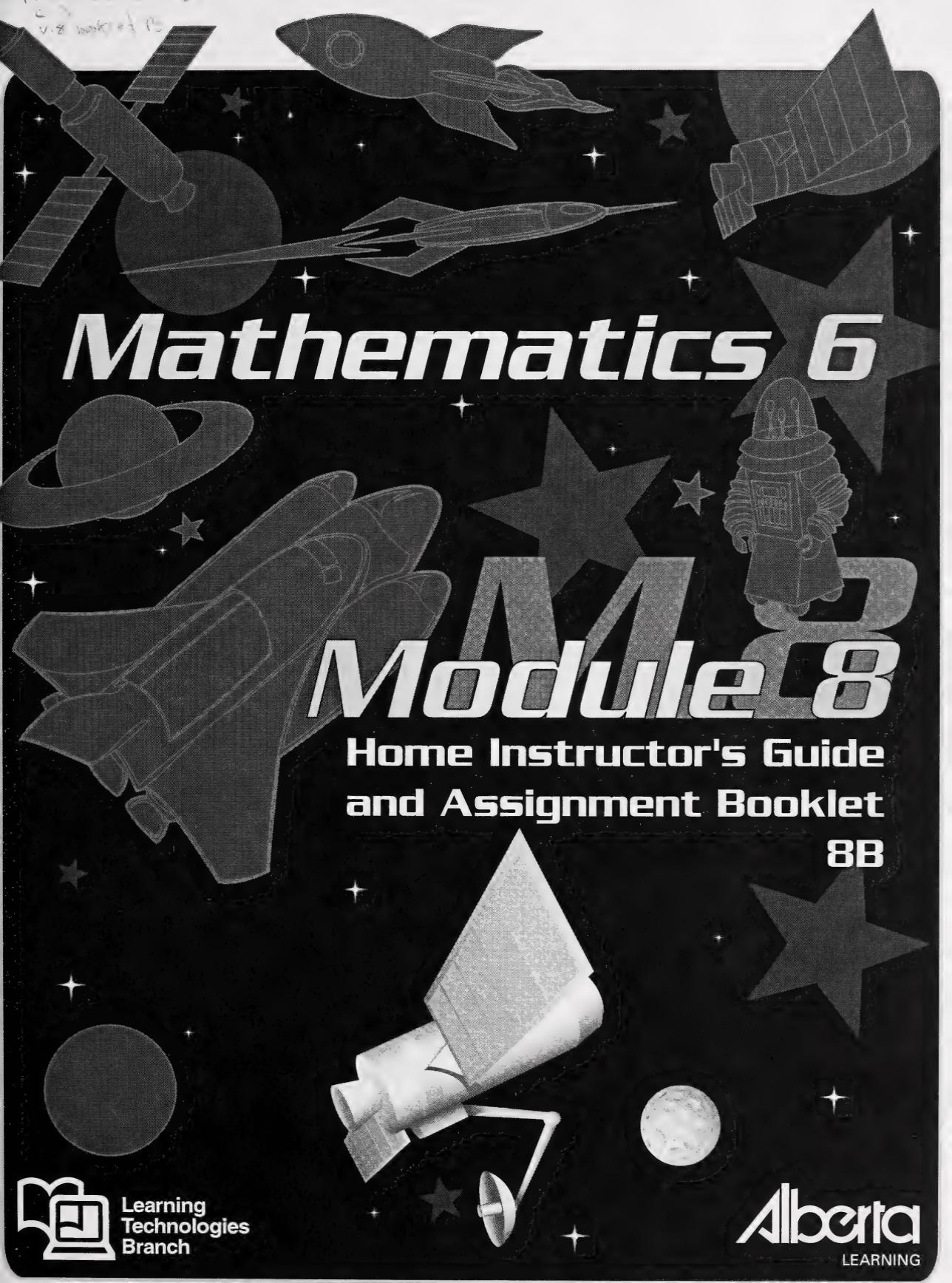
PRICES OF USED CARS

Price (Dollars)	Tallies	Number of Cars (Frequency)
5000–9999		
10 000–14 999		
15 000–19 999		
20 000–24 999		
25 000–29 999		

- ② d. Does the interval table show which price occurs most often? Explain.

- ① e. Which interval has the most prices?

- ④ f. Make and label a histogram of the data.



Mathematics 6

Module 8

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and Assignment Booklet**

8B



**Learning
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LEARNING

Mathematics 6
Module 8: Data Analysis
Home Instructor's Guide and Assignment Booklet 8B
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Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



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Lesson 3: Comparing and Analysing Data

Overview

In this lesson the student compares a variety of data displays and considers the advantages of particular displays for a given context. The student analyses the displays to answer questions from the data.

Special Requirements

There are no special requirements for this lesson.

ASSIGNMENT BOOKLET 8B

PAT0610 Mathematics 6

Module 8: Lesson 3 Assignment and Numbers in the News Project

Home Instructor's Comments and Questions

Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

Date Assignment Received:

Grading:

Additional Information:

FOR HOME INSTRUCTOR USE (if label is missing or incorrect)

Student File Number:

Date Submitted:

Apply Module Label Here

Name

Address

Postal Code

*Please verify that preprinted label is for
correct course and module.*

Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

INSTRUCTIONS FOR SENDING IN THIS DISTANCE LEARNING ASSIGNMENT BOOKLET

When you register for distance learning courses, you are expected to send in Assignment Booklets for corrections regularly. Try to send each Assignment Booklet as soon as you have completed it. Before sending your Assignment Booklet, please check the following:

- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

MAILING

1. Postage Regulations

Do **not** enclose letters with Assignment Booklets.

Send all letters in a separate envelope.

2. Postage Rates

Take your Assignment Booklet to the post office and have it weighed. Attach enough postage and seal the envelope. Assignment Booklets will travel faster if correct postage is used and if they are in large envelopes that are no more than two centimetres thick.

FAXING

1. Assignment Booklets may be faxed. Contact your teacher for the fax number.
2. All faxing costs are the responsibility of the sender.

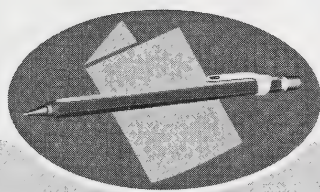
E-MAILING

Assignment Booklets may be e-mailed. Contact your teacher for the e-mail address.

Mathematics 6

Module 8

Data Analysis **ASSIGNMENT BOOKLET 8B**



FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 3 Assignment	30	
Numbers in the News	10	
	40	

Teacher's Comments

Mathematics 6
Module 8: Data Analysis
Assignment Booklet 8B
Learning Technologies Branch

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	

www



You may find the following Internet sites useful:

- Alberta Learning, <http://www.learning.gov.ab.ca>
- Learning Technologies Branch, <http://www.learning.gov.ab.ca/ltb>
- Learning Resources Centre, <http://www.lrc.learning.gov.ab.ca>

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

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ASSIGNMENT BOOKLET 8B

MATHEMATICS 6—MODULE 8: DATA ANALYSIS

LESSON 3 ASSIGNMENT AND NUMBERS IN THE NEWS PROJECT

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

There is one lesson assignment and a Numbers in the News project in this Assignment Booklet. The total value of these assignments is 40 marks. The value of each question is stated in the left margin.

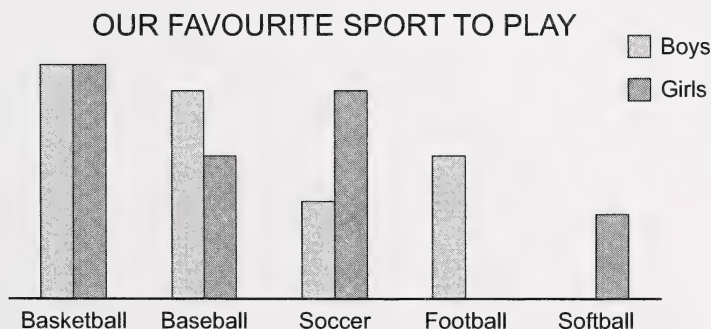
Be sure to proofread each assignment carefully.

30

Lesson 3 Assignment: Comparing and Analysing Data

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

Use the following graph to answer questions 1 and 2.



- 4

1.

List four conclusions you can make from this graph. Explain your reasoning for each.
- ---

- 6

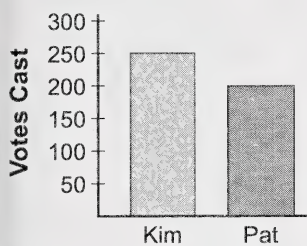
2.

Describe three important pieces of information that are not provided by this graph. Explain how each could affect the data collected.
- ---

Use the following graphs to answer questions 3 and 4.

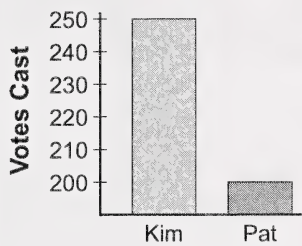
Graph A

RESULTS OF ELECTION
FOR PRESIDENT OF
COMMUNITY KIDS' CLUB



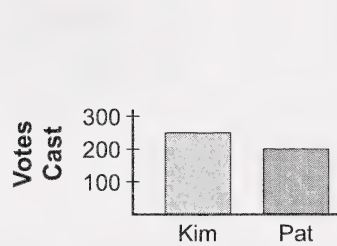
Graph B

RESULTS OF ELECTION
FOR PRESIDENT OF
COMMUNITY KIDS' CLUB



Graph C

RESULTS OF ELECTION
FOR PRESIDENT OF
COMMUNITY KIDS' CLUB



Graph A shows the results of the election for president of the Community Kids' Club. Graph B was prepared by one of the two candidates, and Graph C was prepared by the other candidate.

①

3. a. Which candidate likely prepared Graph B?

②

b. How did that candidate misuse the information?

①

4. a. Which candidate likely prepared Graph C?

②

b. Why might that candidate have counted by hundreds for the scale? Explain.

Asam likes animals, particularly horses. He was curious to know if other kids share his love for animals. He got permission from a store in the mall to survey its customers. He asked every kid who entered the store, “What is your first choice for a house pet?” By the end of the day, with everyone giving one answer, he had recorded 142 specific responses (exactly as they were given to him), and his list contained 28 different answers (e.g., beagle, gerbil, parakeet, kitten, hamster, budgie, turtle, puppy, tarantula). He organized the data into a frequency chart and decided to use the following categories because he was able to fit every pet mentioned into one of them:

- bird
- cat
- creepy crawler
- dog
- fish
- rodent
- turtle

Use the information from above to answer questions 5 to 10.

5. Name three possible responses from kids that Asam may have included in each of the following categories:

① a. rodent _____

① b. bird _____

① c. creepy crawler _____

① 6. For what population does Asam want information?

① 7. What was the sample group that Asam used for his survey?

8. Asam was delighted that everyone surveyed said they wanted a pet. However, he was surprised that nobody picked his favourite animal, a horse. Use your knowledge of surveys, populations, and samples to explain why you either do or do not agree with the following conclusions Asam made.

③

- a. All kids want a pet.

③

- b. No kids want a horse as a pet.

③

9. Asam offered his results to the manager of a pet store at the mall where he made his survey. What decisions might the manager make, using these results?

10

Numbers in the News

Go through the Scavenger Hunt list for Module 8 to make sure you have clipped at least one example for each question. Ask your home instructor to check the samples you found. Choose the samples you wish to use, and label each one with the Scavenger Hunt number it matches. Organize your samples and put them together with any other information required. Submit your project with this Assignment Booklet.

Ask yourself the following questions:

- Is my Numbers in the News project complete? (Have I included all my samples?)
- Do my samples show the ideas clearly? (Are my examples appropriate?)
- Did I take care to be neat when organizing and labelling my work?

